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EXAMINER
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FENSTERMACHER, DAVID MORGAN

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PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* ARVINMERITOR TECHNOLOGY, LLC

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Appeal 2009-004745  
Application 10/725,885  
Technology Center 3600

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Decided: February 22, 2010

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Before JAMESON LEE, RICHARD TORCZON, and  
SALLY C. MEDLEY, *Administrative Patent Judges*.

LEE, *Administrative Patent Judge*.

DECISION ON APPEAL

A. STATEMENT OF THE CASE

This is a decision on appeal by the real party in interest, ArvinMeritor Technology, LLC (“ArvinMeritor”), under 35 U.S.C. § 134(a) from a final

rejection of claims 1-11 and 22-29. We have jurisdiction under 35  
U.S.C. § 6(b). We *affirm-in-part*.

References Relied on by the Examiner

Ries	4,468,981	Sep. 4, 1984
Shiba et al. ("Shiba")	5,311,740	May 17, 1994
Aikawa et al. ("Aikawa")	US 6,770,005 B2	Aug. 3, 2004

The Rejections on Appeal

The Examiner rejected claims 1-3, 6, 9-11, 22-24, and 27-29 under 35  
U.S.C. § 102(b) as anticipated by Ries.

The Examiner rejected claims 1-6, 9-11, 22, and 24-28 under 35  
U.S.C. § 102(b) as anticipated by Aikawa.

The Examiner rejected claims 7 and 8 under 35 U.S.C. § 103(a) as  
unpatentable over Ries and Shiba.

The Invention

The invention relates to an axle assembly including an oil pump to  
lubricate components of the assembly. (Spec. 2: ¶ 7.)

Claim 1 is reproduced below (App. Br. 9 Claims App'x.):

1. An axle assembly comprising:

an axle housing;

a pump housing attachable to cover an opening within said axle  
housing;

a pump mounted within said pump housing, wherein said pump  
housing includes a cavity defining a supply passage for  
communicating lubricant from a sump within said axle housing to said  
pump; and

an input shaft supported by said pump housing and driving said pump.

B. ISSUES

1. Has ArvinMeritor shown that the Examiner was incorrect in finding that Ries discloses a pump with a pump housing that includes a cavity defining a supply passage for communicating lubricant to the pump from a sump?

2. Has ArvinMeritor shown that the Examiner was incorrect in finding that Ries discloses that its pump includes a bearing member that is supported within a pump housing?

3. Has ArvinMeritor shown that the Examiner was incorrect in finding that Aikawa's differential carrier is a pump housing?

4. Has ArvinMeritor shown that the Examiner was incorrect in finding that Aikawa discloses a pump housing that covers the opening of an axle housing?

5. Has ArvinMeritor shown that the Examiner was incorrect in finding that Aikawa's differential carrier includes a cavity defining a supply passage for lubricant?

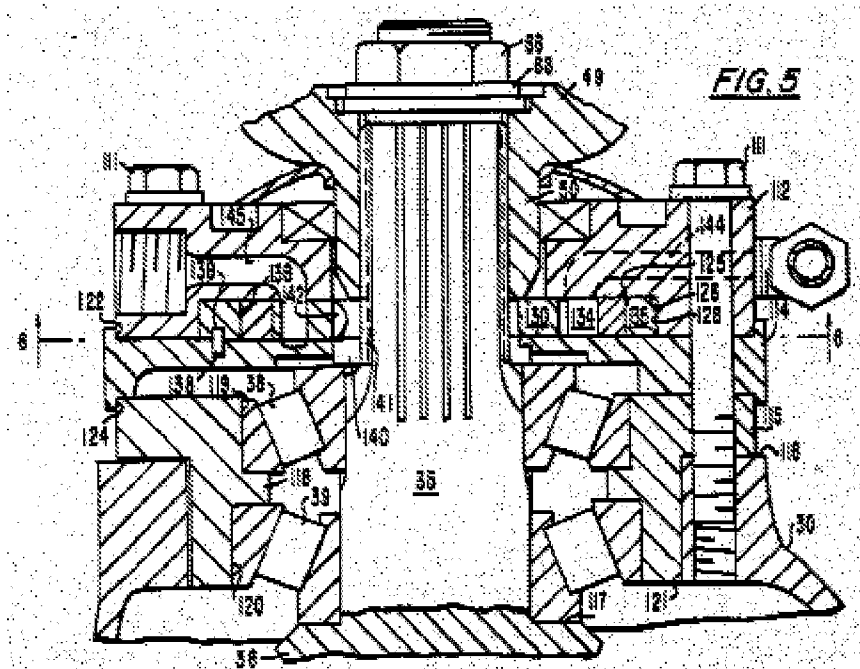
6. Has ArvinMeritor shown that the Examiner was incorrect in finding that ArvinMeritor's differential carrier includes an elongated section that includes an inlet and a cavity?

C. FINDINGS OF FACT

1. Ries discloses an axle and pump assembly with pump 110 that includes outer pump housing 112 and inner pump housing 114. (Ries 4:48-50).

2. In Ries, element 144 is disclosed as an inlet port that is drilled into outer pump housing 112. (*Id.* at 5:24-28.)

3. Ries' Figure 5 is reproduced below and illustrates the configuration of the inlet port:



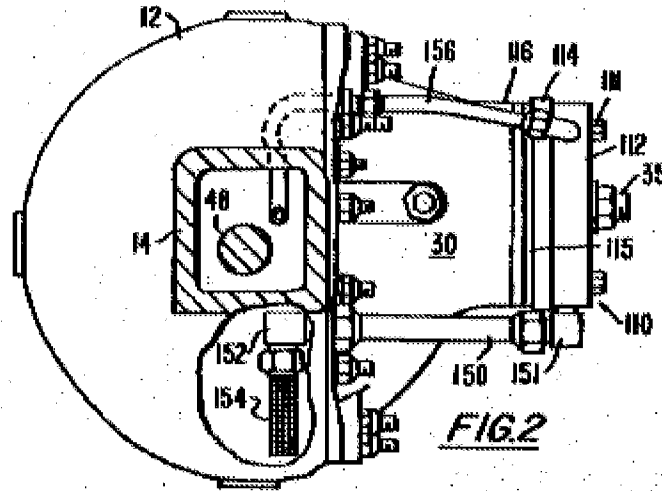
The figure above depicts a sectional view of a portion of Ries' axle and pump assembly.

4. Figure 5 illustrates inlet port 144, shown with dotted lines, as a passage that extends within pump outer housing 112.

5. Ries describes that a sump located in an axle housing bowl 12 (not shown in the figure reproduced above) is connected to inlet port 144 via suction line 150 (not shown) that is attached to fitting 151 (unnumbered on right side of the figure) of the inlet port and operates to supply lubricating oil from the sump to pump cavity 125. (*Id.* at 5:29-39.)

6. Ries discloses element 30 as a differential carrier which is secured to axle housing 11. (Ries 2:42-47.)

7. Ries' Figure 2 is reproduced below:

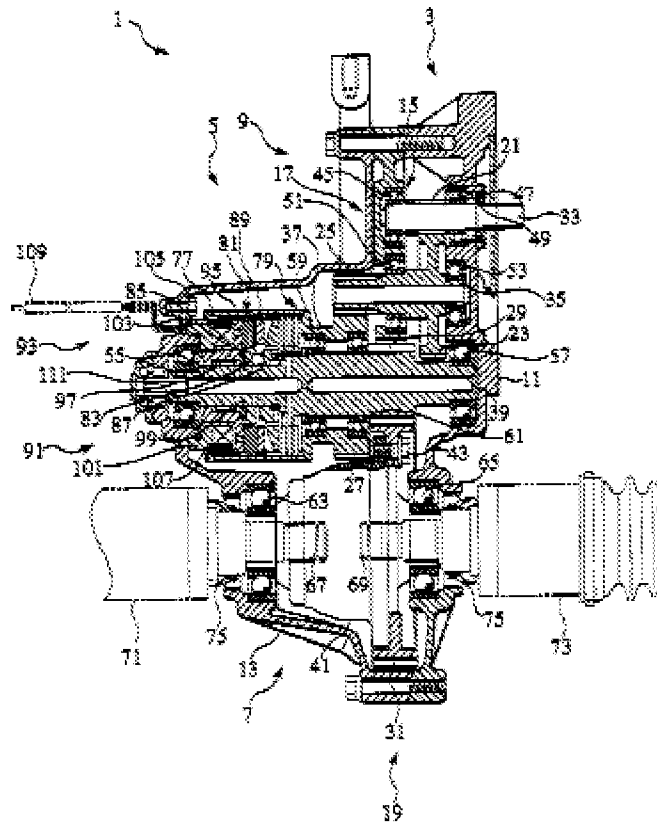


The figure above depicts a sectional view of Ries' axle and pump assembly.

8. As described in Ries and shown in Figure 2, axle housing 11 is defined by an axle housing bowl 12, which is separated from bearing block 115 by the length of differential carrier 30. (*Id.* at 2:30-36; Fig. 2.)

9. Aikawa discloses a power transmission system for use in an automobile. (Aikawa 1:7-12)

10. Aikawa's Figure 1 is reproduced below:



The figure above depicts an embodiment of a power transmission system for a vehicle.

11. Aikawa discloses that element 13 is a differential carrier part of casing 9, which, when connected to gear casing part 11 via upper and lower bolts (unnumbered), defines an interior space in which pump 93 resides. (*Id.* at 10: 32-36; Fig. 1.)

12. In Aikawa, each of gear casing part 11 and differential carrier part 13 include an opening that leads to an interior open space for accommodating portions of its power transmission system. (Aikawa 10:32-36.)

13. Aikawa states that (*Id.* at 13:38-44):

The trochoid gear pump 93 is driven for rotation by the inner shaft 39 via a hollow connection shaft 111, to pump up oil from the oil sump of the casing 9, and to supply pumped oil through axial and radial oil paths formed in the connection shaft 111 and the inner shaft 39 to the main clutch 79, pilot clutch 81, ball cam 83, thrust bearing 99, and the like, making sufficient lubrication and cooling thereto.

14. Aikawa's figures show its differential carrier part 13 only in cross-section.

#### D. PRINCIPLES OF LAW

Anticipation is established when a single prior art reference discloses all elements of the claimed invention. *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990).

#### E. ANALYSIS

##### The rejections based on Ries

The Examiner rejected claims 1-3, 6, 9-11, 22-24, and 27-29 as anticipated by Ries and claims 7 and 8 as unpatentable over Ries and Shiba. Claims 1 and 24 are independent. Claims 2, 3, 6-11, 22, and 23 are dependent on, and argued collectively with, claim 1. Claim 29 is dependent on, and argued collectively with, claim 24. Claims 27 and 28 are each separately argued.

##### *Claims 1-3, 6-11, 22, and 23*

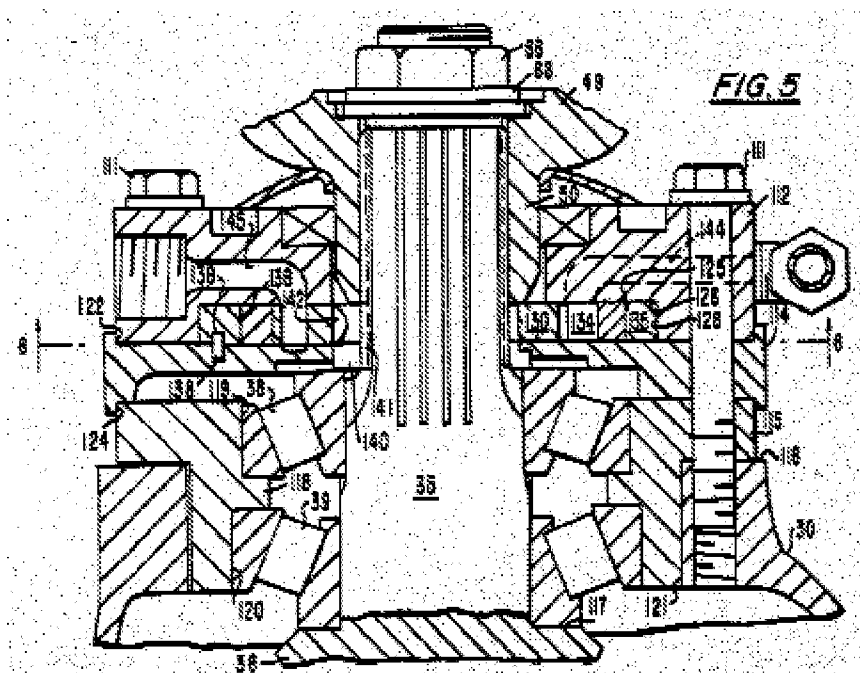
We focus on the limitations that are in dispute. Claim 1 requires a pumping housing that “includes a cavity defining a supply passage for



communicating lubricant from a sump within said axle housing to said pump[.]” (App. Br. 9 Claims App’x.) The Examiner found the above-quoted limitation described in Ries. ArvinMeritor challenges that finding.

The Examiner pointed to Ries’ element 144 as forming the required cavity defining a lubricant supply passage. (Ans. 5:20-6:6.) Ries discloses an axle and pump assembly with pump 110 that includes outer pump housing 112 and inner pump housing 114. (Ries 4:48-50). Element 144 is disclosed as an inlet port that is drilled into outer pump housing 112. (*Id.* at 5:24-28.)

Ries’ Figure 5 is reproduced below and illustrates the configuration of the inlet port:



The figure above depicts a sectional view of a portion of Ries’ axle and pump assembly.

As shown in the above figure, inlet port 144, illustrated with dotted lines, is a passage that extends within pump outer housing 112. Ries

describes that a sump located in an axle housing bowl 12 (not shown in the figure reproduced above) is connected to inlet port 144 via suction line 150 (not shown) that is attached to fitting 151 (unnumbered on right side of the figure) of the inlet port and operates to supply lubricating oil from the sump to pump cavity 125. (*Id.* at 5:29-39.) In light of those teachings, the Examiner found that Ries discloses a pump housing that includes a cavity defining a supply passage as required by the claims.

ArvinMeritor contests the Examiner's finding, arguing that in Ries, oil supplied from its sump must pass through pressurized supply lines 150 and 156 to reach its pump. According to ArvinMeritor, those lines are external to the pump housing and are thus not a supply passage within the pump housing as required by claim 1. (App. Br. 5:1-8; Reply Br. 1:8-14.)

ArvinMeritor's argument is unpersuasive. The Examiner did not rely on either line 150 or 156 in accounting for the feature of "a cavity defining a supply passage." Rather, the Examiner pointed to the cavity and supply passage formed by Ries' inlet port 144 as meeting that feature. Evidently, ArvinMeritor's view is that its claim 1 requires that the entirety of the oil supply conduits between the sump and the pump must be located within the pump housing. The claim, however, does not include such a limitation. As stated in claim 1, the pump housing need only include "*a* cavity defining *a* supply passage" (emphasis added) for directing lubricating oil from the sump to the pump. In Ries, inlet port 144 is a passage through which the oil flows from the sump within its axle housing to pump cavity 125. Even if other components which also direct the oil are external to Ries' pump housing, that does not preclude inlet port 144 from itself being "a cavity defining a supply passage."

ArvinMeritor has not persuaded us of any deficiencies in the Examiner's rejection of claim 1 as anticipated by Ries. Accordingly, we sustain the rejection of claim 1 as anticipated by Ries. Claims 2, 3, 6-11, 22, and 23 were argued collectively with claim 1. We also sustain the rejection of claims 2, 3, 6, 9-11, 22 and 23 as anticipated by Ries and the rejection of claims 7 and 8 as unpatentable over Ries and Shiba.

*Claims 24 and 27-29*

Claim 24 is independent and reproduced below (App. Br. 10 Claims App'x.):

24. An axle assembly comprising:
- an axle housing including an opening for an input shaft;
  - a pump housing attached to the axle housing over said opening;
  - a pump mounted within said pump housing and driven by said input shaft; and
  - a bearing member supported within said pump housing separate from said axle housing for supporting rotation of said input shaft.

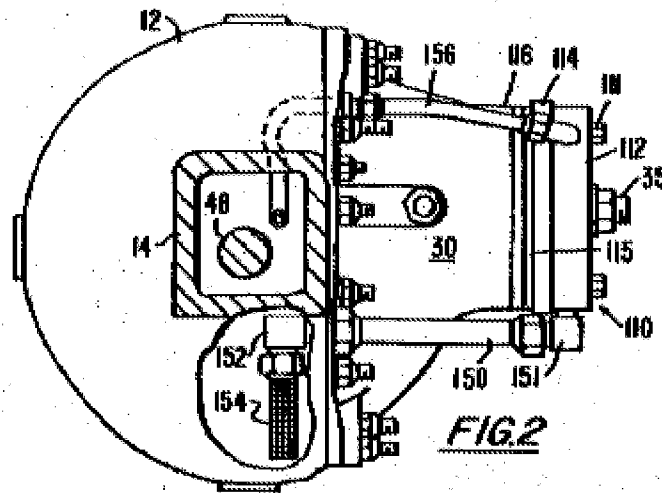
The Examiner found that Ries meets all the above-quoted limitations and anticipates claim 24. Specifically, the Examiner found that Ries' element 115 is part of a pump housing that supports bearing members 38 and 39 separately from axle housing 11. (Ans. 6:10-12.)

ArvinMeritor contests the Examiner's findings, arguing that two features of its claim 24 are missing from Ries. ArvinMeritor first contends that Ries' element 115 is a bearing block that is located beyond the pump housing formed by housing members 112 and 114 and is thus not "within" the pump housing as required by the claim. (Reply Br. 2:2-16.)

ArvinMeritor also contends that bearing block 115, which supports bearings 38 and 39, is within “axle housing 30” such that the bearings are not supported separate from the axle housing. (*Id.*)

While ArvinMeritor describes Ries’ element 30 as an “axle housing,” the reference itself discloses element 30 as a differential carrier which is in turn secured to axle housing 11. (Ries 2:42-47.)

Ries’ Figure 2 is reproduced below:



The figure above depicts a sectional view of Ries’ axle and pump assembly.

As described in Ries and shown in Figure 2, reproduced above, axle housing 11 is defined by an axle housing bowl 12, which is separated from bearing block 115 by the length of differential carrier 30. (*Id.* at 2:30-36; Fig. 2.) Thus, the bearings 38 and 39 that are supported within bearing block 115 are supported separately from axle housing 11. We therefore do not agree with ArvinMeritor that Ries lacks a bearing member that is supported separately from its axle housing.

Claim 24, however, also requires that the bearing member resides “within” the pump housing. Although the Examiner uses the term “pump housing” when referencing Ries’ bearing block 115, Ries itself does not use that term when describing element 115. Ries discloses that the housing for its pump 110 is formed by “outer housing member 112” and “inner housing member 114.” (Ries 4:48-50.) The terms “outer” and “inner” convey that members 112 and 114 are the boundaries for the pump housing. As shown in Ries’ Figure 5, bearing block 115 is located beyond the boundaries established by the inner and outer housing members. In that configuration, the bearing block is not reasonably considered as being “within” Ries’ pump housing.

Accordingly, we do not sustain the rejection of claim 24 as anticipated by Ries. Claims 27-29 are dependent, either directly or indirectly, on claim 24. We also do not sustain the anticipation rejection of claims 27-29 based on Ries.

#### The rejection based on Aikawa

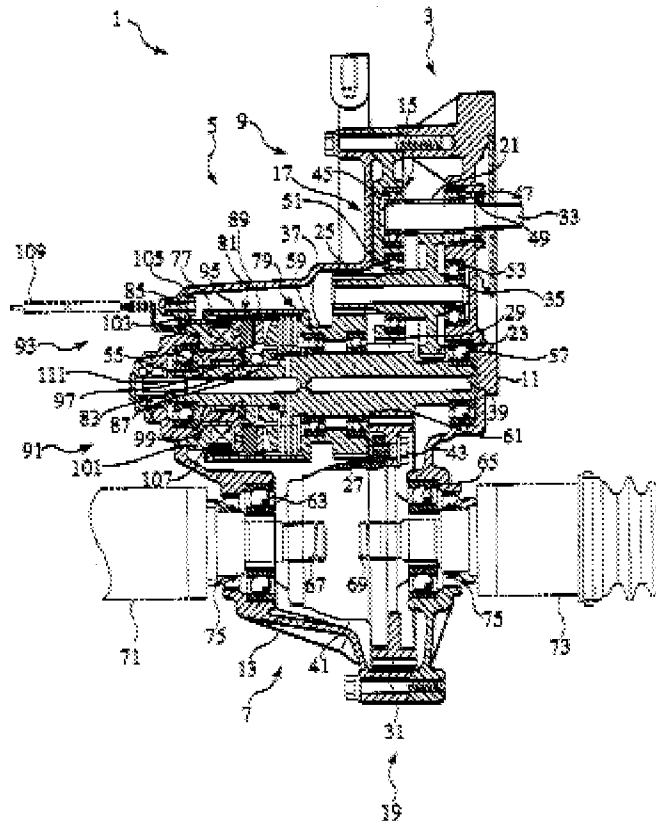
The Examiner rejection claims 1-6, 9-11, 22, and 24-28 as anticipated by Aikawa. ArvinMeritor argues dependent claims 2-6, 9-11, and 22 collectively with independent claim 1. Dependent claim 29 is argued collectively with independent claim 24. Claims 27 and 28 are each separately argued.

#### *Claims 1-6, 9-11, and 22*

ArvinMeritor first contends that the Examiner’s anticipation rejection of claim 1 based on Aikawa is deficient because Aikawa allegedly lacks a

pump housing. The Examiner pointed to Aikawa's element 13 as being a pump housing because it contains pump 93. (Ans. 4:3-5.)

Aikawa's Figure 1 is reproduced below:



The figure above depicts an embodiment of a power transmission system for a vehicle.

Aikawa discloses that element 13 is a differential carrier part of casing 9, which, when connected to gear casing part 11 via upper and lower bolts (unnumbered), defines an interior space in which pump 93 resides. (Aikawa 10: 32-36; Fig. 1.)

ArvinMeritor submits that while pump 93 is contained within a space bounded by differential carrier part 13, that space also includes other components such as “at least three shafts, meshing gears and a clutch 81.” (App. Br. 6:15-17.) ArvinMeritor concludes that the presence of those

additional components means that a person of ordinary skill in the art would not regard carrier part 13 as a pump housing. (*Id.* at 6:17-18.)

ArvinMeritor's argument is unpersuasive. The portion of a casing, such as Aikawa's carrier part 13, that houses a pump is reasonably viewed as a housing for the pump. Contrary to ArvinMeritor's contention, simply because the housing also contains other components does not mean that the housing is precluded from being a pump housing.

Moreover, ArvinMeritor does not point to any objective evidence, such as affidavit evidence or expert testimony, substantiating its assertion that one of ordinary skill in the art would not consider Aikawa's differential carrier part 13 as a pump housing. The assertion is merely argument of counsel, which cannot take the place of evidence lacking in the record. *Estee Lauder Inc. v. L'Oreal, S.A.*, 129 F.3d 588, 595 (Fed. Cir. 1997).

ArvinMeritor also contends that the feature in claim 1 of a pump housing that is attachable to cover an opening within the axle housing is missing from Aikawa. In particular, according to ArvinMeritor, differential carrier part 13 cannot be read as covering an opening of the axle housing formed by gear casing part 11 because the carrier part "defines a substantial portion of the shape and boundaries of the internal open space" within casing 9. (App. Br. 6:20-21; Reply Br. 3:19-20.) ArvinMeritor contends that that reading is beyond what one skilled in the art would recognize its claim limitations as covering. (App. Br. 6:22-23; Reply Br. 3:23-24.)

ArvinMeritor's argument lacks merit. In Aikawa, each of gear casing part 11 and differential carrier part 13 includes an opening that leads to an interior open space for accommodating portions of the power transmission system. (Aikawa 10:32-36; Fig. 1.) When those parts are joined to one

another, the opening of one part is covered by the other part in forming the enclosed casing 9. ArvinMeritor does not meaningfully explain why it believes that carrier part 13 cannot be viewed as covering the opening in gear casing 11 simply because the carrier part is also configured to have an open space that is enclosed. That the carrier part 13 also contains an open space that is covered has no bearing on its function of covering the opening of gear casing 11.

Moreover, ArvinMeritor again relies simply on attorney argument to characterize the structure of Aikawa as being beyond the scope of ArvinMeritor claims as they would be understood by one of ordinary skill in the art. That argument, however, is unsubstantiated by any objective evidence. The unsupported argument of ArvinMeritor's counsel as to what structures one of ordinary skill would understand as falling outside the scope of the claims is inadequate to demonstrate deficiencies in the Examiner's rejection.

Lastly, ArvinMeritor contends that Aikawa does not disclose the claim feature of "a pump housing having a cavity defining a supply passage for communicating lubricant from a sump within the axle housing to said pump." According to ArvinMeritor, Aikawa's differential carrier part 13 has no need for a cavity defining a supply passage because Aikawa's pump is disposed within an interior space of the carrier part and is in direct communication with the sump. (App. Br. 6:25-4:2.)

In accounting for the cavity and supply passage, the Examiner cited to column 13, lines 38-44 of Aikawa. (Ans. 4:11-13.) That cited portion reads:

The trochoid gear pump 93 is driven for rotation by the inner shaft 39 via a hollow connection shaft 111, to pump up oil from the oil sump of the casing 9, and to supply pumped oil through axial and radial oil



paths formed in the connection shaft 111 and the inner shaft 39 to the main clutch 79, pilot clutch 81, ball cam 83, thrust bearing 99, and the like, making sufficient lubrication and cooling thereto.

Thus, lubricating oil is guided from an oil sump located within casing 9 to pump 93 and enters the pump via “axial and radial oil paths” formed in connection shaft 111. As shown in Aikawa’s Figure 1, connection shaft 111 is located within differential carrier part 13, *i.e.*, the pump housing.

Aikawa’s “axial and radial oil paths” which are in connection shaft 111 are therefore also included within the pump housing. Those paths operate as passages that direct oil from the sump in casing 9 to the interior of pump 93. ArvinMeritor does not address the portion of Aikawa that was highlighted by the Examiner or explain why it is insufficient to account for the claim feature of a pump housing that must simply “include[] a cavity defining a supply passage for communicating lubricant...” On this record, we are not persuaded of any reversible error in the Examiner’s rejection of ArvinMeritor’s claim 1 based on Aikawa.

Accordingly, we sustain the rejection of claims 1-6, 9-11, and 22 as anticipated by Aikawa.

#### *Claims 24 and 29*

Claim 24 requires a pump housing attached to the axle housing over an opening of the axle housing. The Examiner found that that feature is met by Aikawa’s differential carrier part 13 as it forms a pump housing which attaches to an axle housing formed by gear casing part 11 and covers the opening of that axle housing.

The above-noted feature of claim 24 corresponds to the similar feature of claim 1. ArvinMeritor makes the same argument for claim 24 that it did

for claim 1, namely that differential carrier part 13 does not cover an “opening” of gear casing part 11 because the carrier part itself includes a hollow portion that defines a portion of the interior space of casing 9 when the carrier part and the gear casing part are joined. (Reply Br. 4:6-9.) For the same reasons given above in connection with claim 1, we reject ArvinMeritor’s argument with respect to claim 24.

We sustain the rejection of claim 24 as anticipated by Aikawa. As claim 29 is argued collectively with claim 24, we also sustain the rejection of that claim based on Aikawa.

*Claim 27*

Claim 27 is dependent on claim 24 and adds the limitation (App. Br. 11 Claims App’x.):

wherein said pump housing includes an inlet in communication with a sump within said axle housing and a cavity defining a supply passage within said pump housing from said inlet to said pump.

The Examiner found that the above-quoted limitation is disclosed by Aikawa in column 13, lines 38-44. As discussed above in the context of claim 1, the portion of Aikawa cited by the Examiner describes that oil is directed from a sump within casing 9 to the interior of pump 93 through axial and radial oil paths formed within connection shaft 111.

ArvinMeritor generally asserts that Aikawa’s disclosure does not account for the features of claim 27. (App. Br. 7:15-18; Reply Br. 4:18-25.) However, as it did with claim 1, ArvinMeritor does not address the portion of Aikawa cited by the Examiner or explain why that portion’s description of delivering oil from a sump within casing 9 to the interior of pump 93

through axial and radial pathways does not account for the features of claim 27. Accordingly, we are not persuaded of any reversible error in the Examiner's rejection of claim 27 based on Aikawa.

We sustain the rejection of claim 27 as anticipated by Aikawa.

*Claim 28*

Claim 28 is dependent on claim 27 and adds the limitation "wherein said pump housing includes an elongated section including said inlet and said cavity." (App. Br. 11 Claims App'x.)

The Examiner found the above-quoted feature described by Aikawa, stating (Ans. 8:22-9:3):

[I]t is the Examiner's view that Aikawa et al. shows the elongated section (13) including the inlet and the cavity. Although Aikawa et al. does not show exact configuration as the appellant's present invention, the pump housing section (13) meets the definition of being "elongated".

ArvinMeritor contends that Aikawa does not disclose any feature that can reasonably be considered as meeting the added feature of claim 28. (App. Br. 7:20-23; Reply Br. 5:2-7.)

Here, the dispute centers on conflicting statements between the Examiner and ArvinMeritor. On one hand, the Examiner simply states that some portion of Aikawa's differential carrier part 13 is elongated and includes the required inlet and cavity. ArvinMeritor, on the other hand, states otherwise. Although the Examiner urges that some general definition of "elongated" supports his position, no definition is provided. The term "elongate" means "1: stretched out 2: slender." *Merriam Webster's Collegiate Dictionary* 375 (10<sup>th</sup> ed. 1996). Thus, an elongated section is one that is viewed as stretched out or slender. Aikawa's figures show its

differential carrier part 13 only in cross-section. It is not apparent from those figures what the actual shape of the carrier part is.

The Examiner bears the initial burden of establishing that a claim is *prima facie* anticipated. The Examiner's general statement, unsupported by the factual record, that the entirety of Aikawa's differential carrier part 13 is somehow considered "elongated" is insufficient to meet that burden. On this record, we do not sustain the Examiner's rejection of claim 28 as anticipated by Aikawa.

#### F. CONCLUSION

1. ArvinMeritor has not shown that the Examiner was incorrect in finding that Ries discloses a pump with a pump housing that includes a cavity defining a supply passage for communicating lubricant to the pump from a sump.

2. ArvinMeritor has shown that the Examiner was incorrect in finding that Ries discloses that its pump includes a bearing member that is supported within a pump housing.

3. ArvinMeritor has not shown that the Examiner was incorrect in finding that Aikawa's differential carrier is a pump housing.

4. ArvinMeritor has not shown that the Examiner was incorrect in finding that Aikawa discloses a pump housing that covers the opening of an axle housing.

5. ArvinMeritor has not shown that the Examiner was incorrect in finding that Aikawa's differential carrier includes a cavity defining a supply passage for lubricant.

6. ArvinMeritor has shown that the Examiner was incorrect in finding that ArvinMeritor's differential carrier includes an elongated section that includes an inlet and a cavity.

G. ORDER

The rejection of claims 1-3, 6, 9-11, 22, and 23 under 35 U.S.C. § 102(b) as anticipated by Ries is affirmed.

The rejection of claims 24 and 27-29 under 35 U.S.C. § 102(b) as anticipated by Ries is reversed.

The rejection of claims 7 and 8 under 35 U.S.C. § 103(a) as unpatentable over Ries and Shiba is affirmed.

The rejection of claims 1-6, 9-11, 22, and 24-27 under 35 U.S.C. § 102(b) as anticipated by Aikawa is affirmed.

The rejection of claim 28 under 35 U.S.C. § 102(b) as anticipated by Aikawa is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED-IN-PART

Appeal 2009-004745  
Application 10/725,885

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